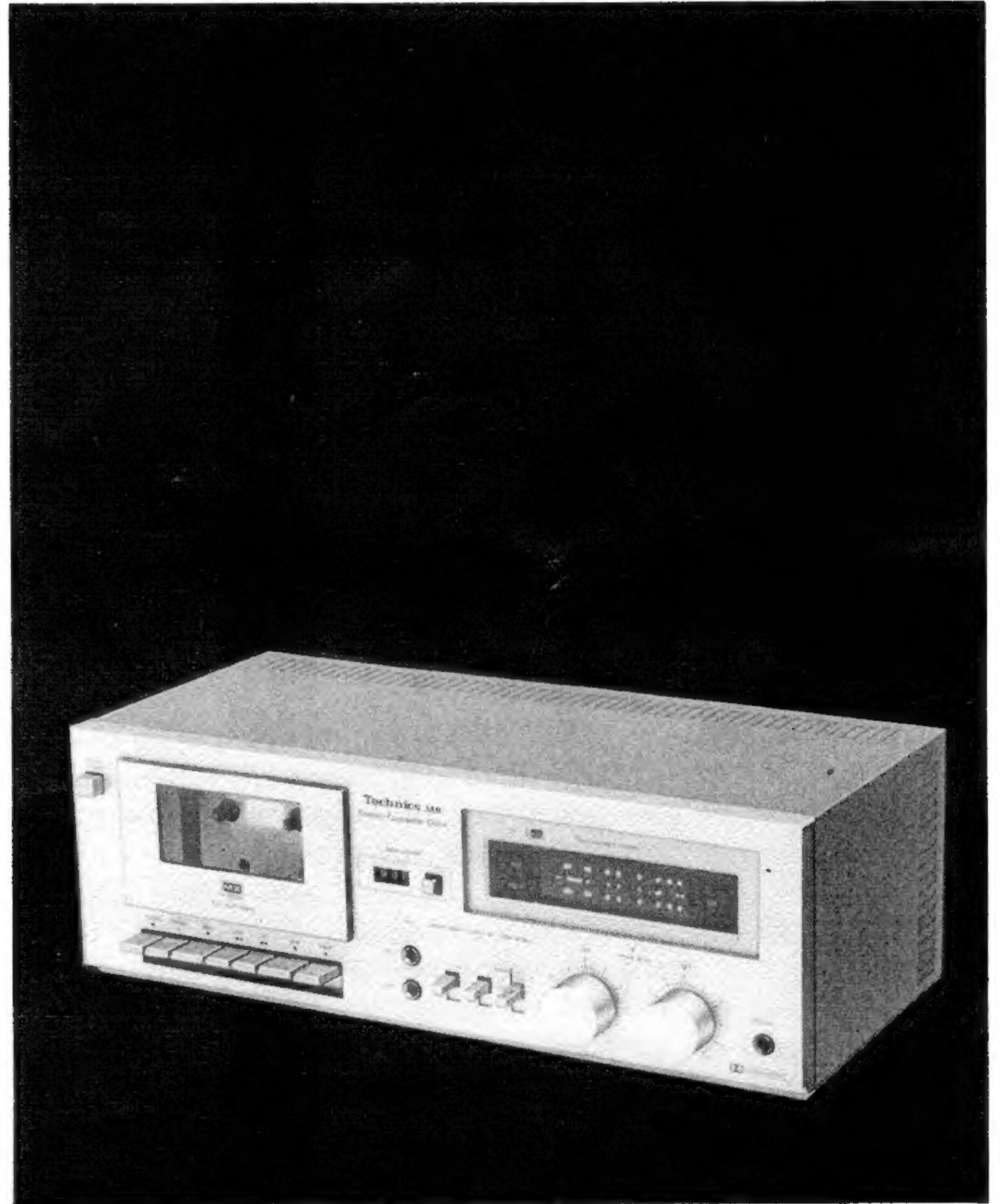


Technics

TAPE DECK

RS-M8

OPERATING INSTRUCTIONS



Before operating this set, please read these instructions completely.

We thank you for selecting the Model RS-M8 Technics Cassette Tape Deck for your recording and playback enjoyment.

To obtain the maximum benefit of the many features of this deck, please read these operation instructions completely.

WARNING:

**TO PREVENT FIRE OR SHOCK HAZARD,
DO NOT EXPOSE THIS APPLIANCE TO
RAIN OR MOISTURE.**

FEATURES

1. "Metal tape" Recording
2. FL (Fluorescent) Bar-Graph Meters
3. Electronically Controlled DC Motor
4. MX Record/Playback Head
5. Full Auto-Stop Mechanism

OPERATION NOTES

1. Horizontal Placement

For best performance, place this unit in a horizontal position.

2. Location

Performance may be adversely affected by extremely hot [above 100°F. (35°C.)] or extremely cold [below 40°F. (5°C.)] locations, direct sunshine, or excessive vibration.

3. A "click" noise may be heard when the power switch is turned on or off. To avoid this, be sure to set the volume control of the amplifier to the minimum position.

4. Power Source

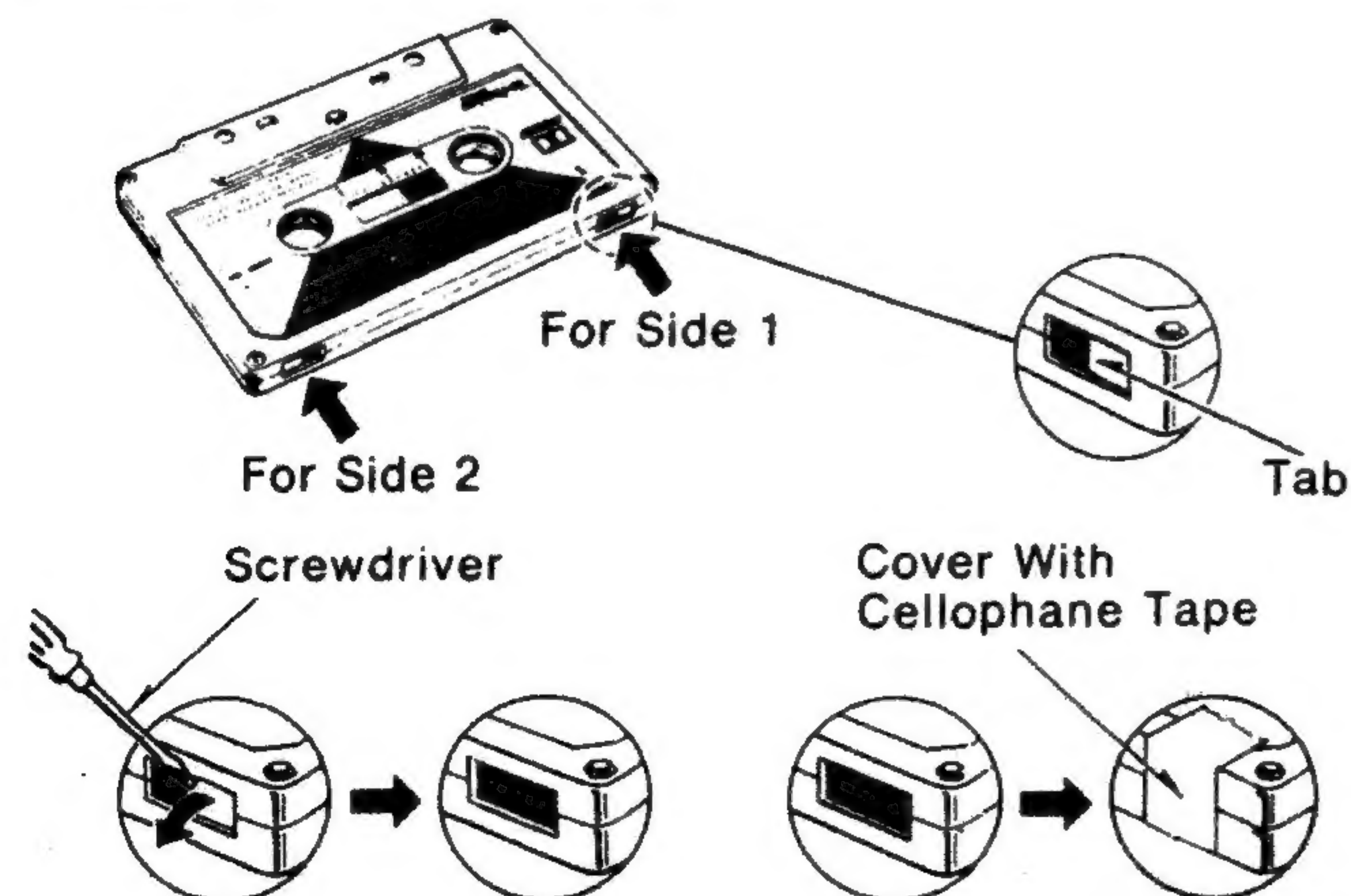
This unit features a DC operated motor which makes it possible to operate on 50 Hz or 60 Hz AC power frequency without any conversion. The voltage source should be within $\pm 5\%$ of the unit's rated voltage. Variations in excess of $\pm 10\%$ of rated voltage may cause uneven performance, or possible damage to the unit.

5. Clean The Head Assembly

One of the most important factors in the determination of good tape recorder performance is regular cleaning of the head assembly. Refer to "MAINTENANCE" on page 6 and be sure to always keep the head surfaces clean.

ACCIDENTAL-ERASE PREVENTION

Tape cassettes have special plastic tabs, one for side one and one for side two, which, if removed, prevent accidental erasure of recorded material. These tabs can be pushed out with a screwdriver or similar tool. If they are not in the cassette, the Record Button cannot be depressed. If, for any reason, it is later desired to make a recording on a cassette from which the tabs have been removed, it is possible to do so by simply covering the holes where the tabs were with cellophane tape, and then record in the usual way.



The serial number of this product may be found on the bottom of the unit.

You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model no. _____

Serial no. _____

6. Dolby Noise Reduction System*

7. Mic/Line Input Selector

8. Separate L/R Input Level Controls

9. Oil-Damped Soft Loading and Ejection

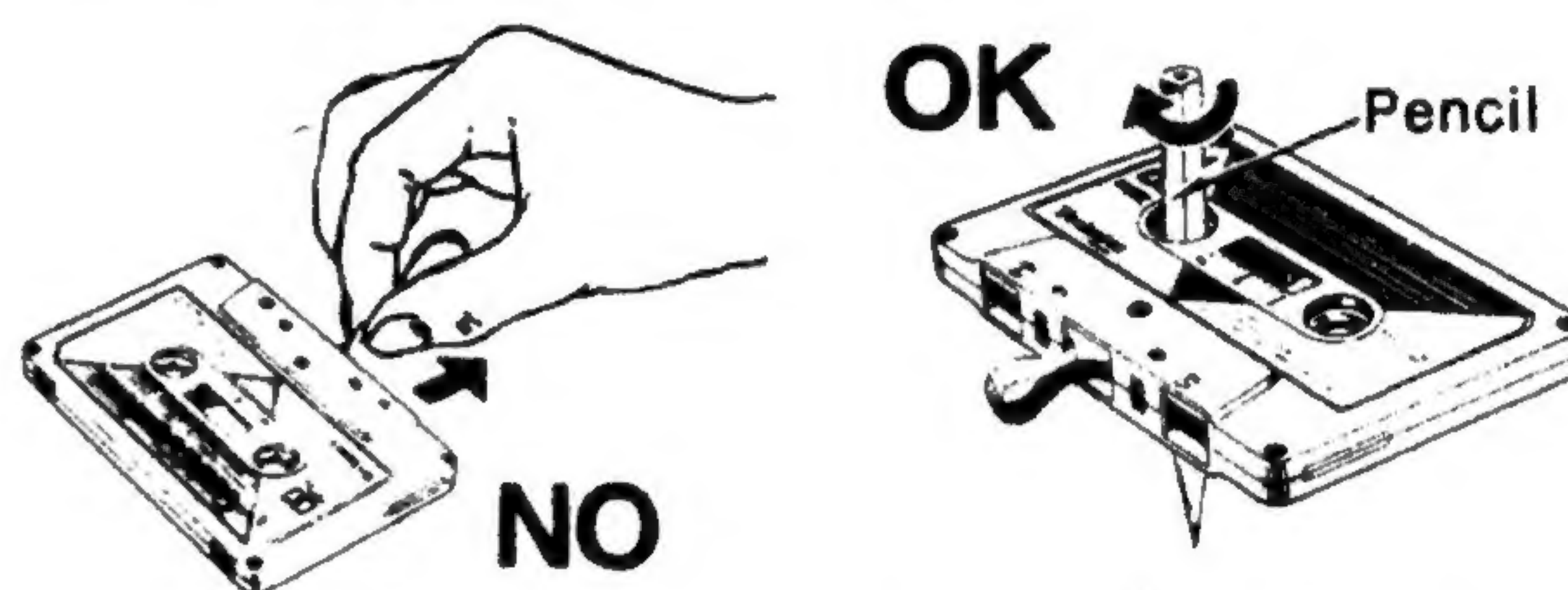
CASSETTE TAPE

About Cassette Tape

The cassette tape used in this unit is the universal type used throughout the world.

Notes:

1. Do not pull the tape out of the cassette openings.
2. If the tape is loose in the cassette, the tape may become wound onto the Pinch Roller and result in breakage or damage. If the tape is loose, use a pencil as a drive shaft to rotate the reel in the proper direction.



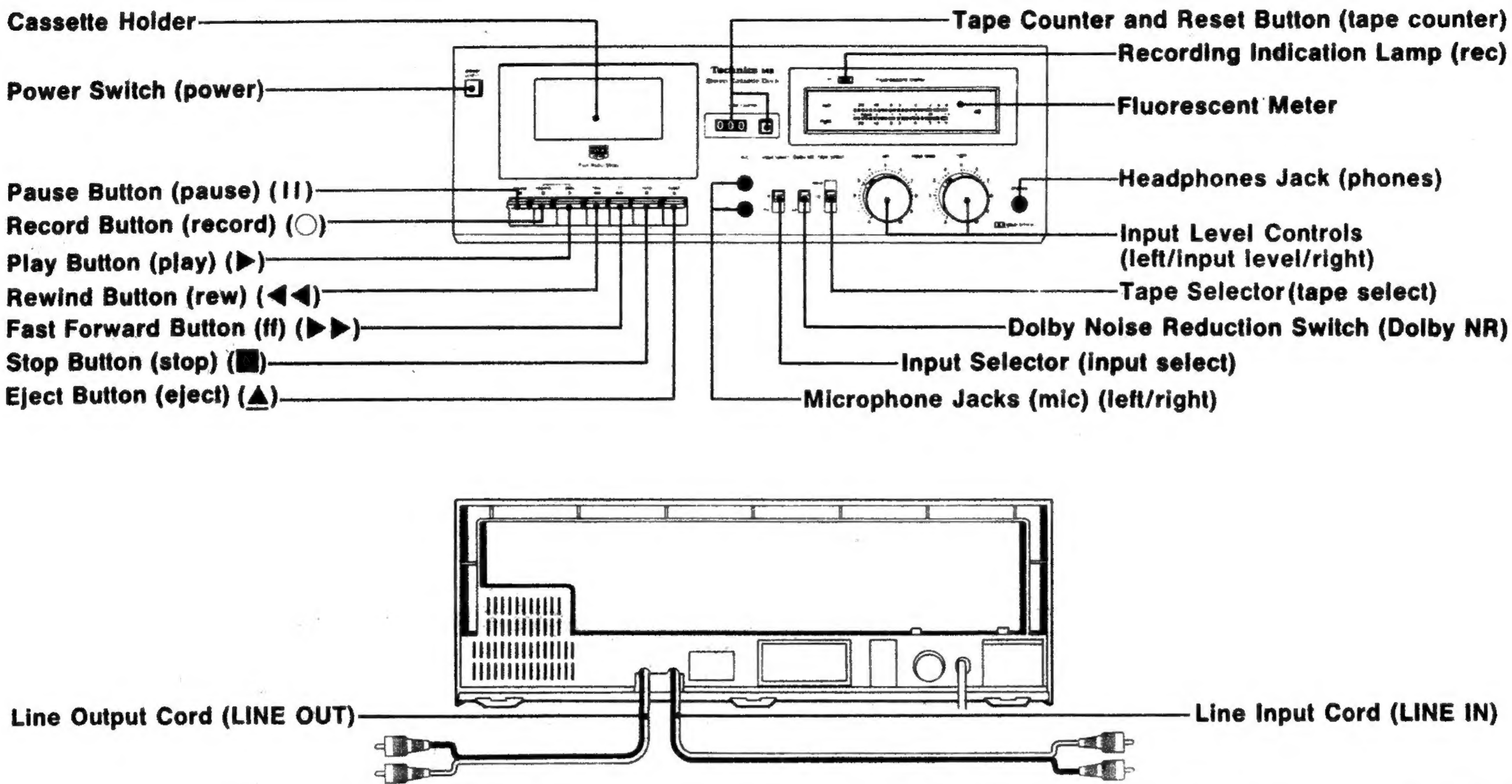
3. Avoid storing this unit in places where the temperature and/or the humidity is high.
4. If the tape is very tightly wound/or unevenly wound, wind and rewind it in the fast forward and rewind modes before use.
5. Use only high quality tapes up to the length of C-90. Do not use C-120 or C-180 tapes in this unit.
6. Since dirt on the Heads, Capstan or Pinch Roller can cause tape malfunctions, these parts must be kept clean, as instructed in the "MAINTENANCE" on page 6.

Product Service

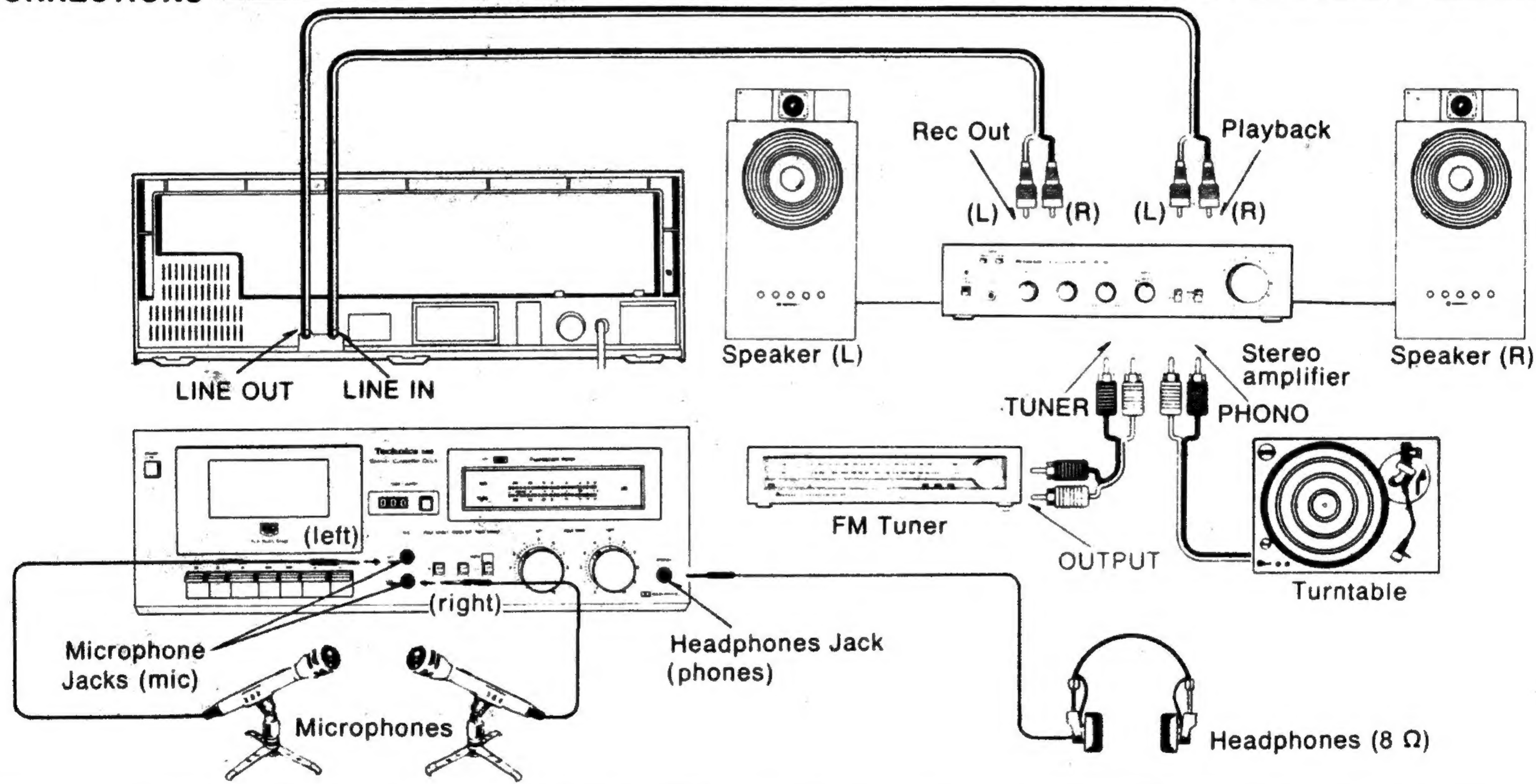
Should your Technics product require service, refer to the Directory of Authorized Servicenters, or to your franchised Panasonic dealer, for assistance. Do not send the product to the executive, or regional sales offices. They are not equipped to make repairs.

* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

CONTROLS



CONNECTIONS



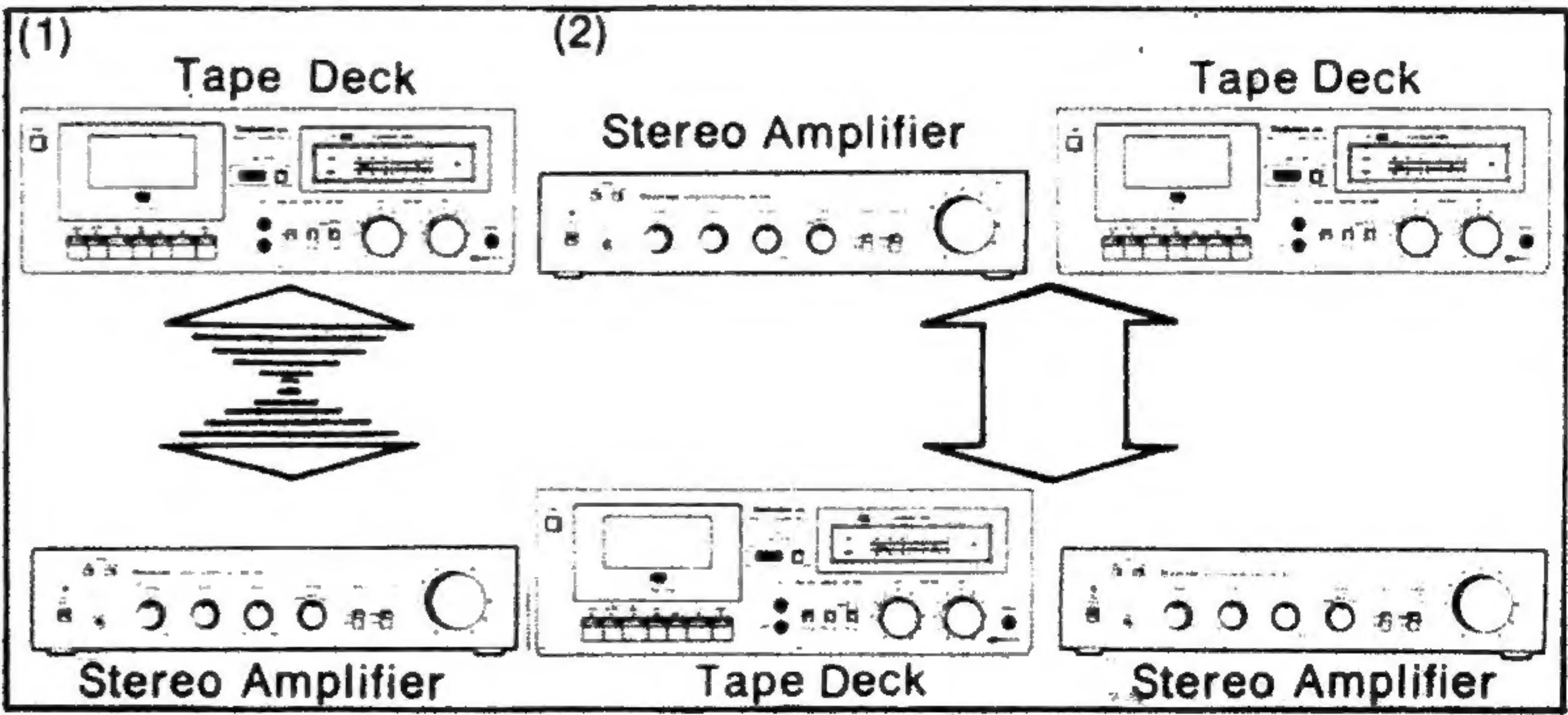
Connection Note:

Connections should be made in accordance with the connection diagram and the following instructions. When 2 microphones are used in order to record in stereophonic sound, be sure both of them have the same performance and specification standards.

Location of this unit and stereo amplifier

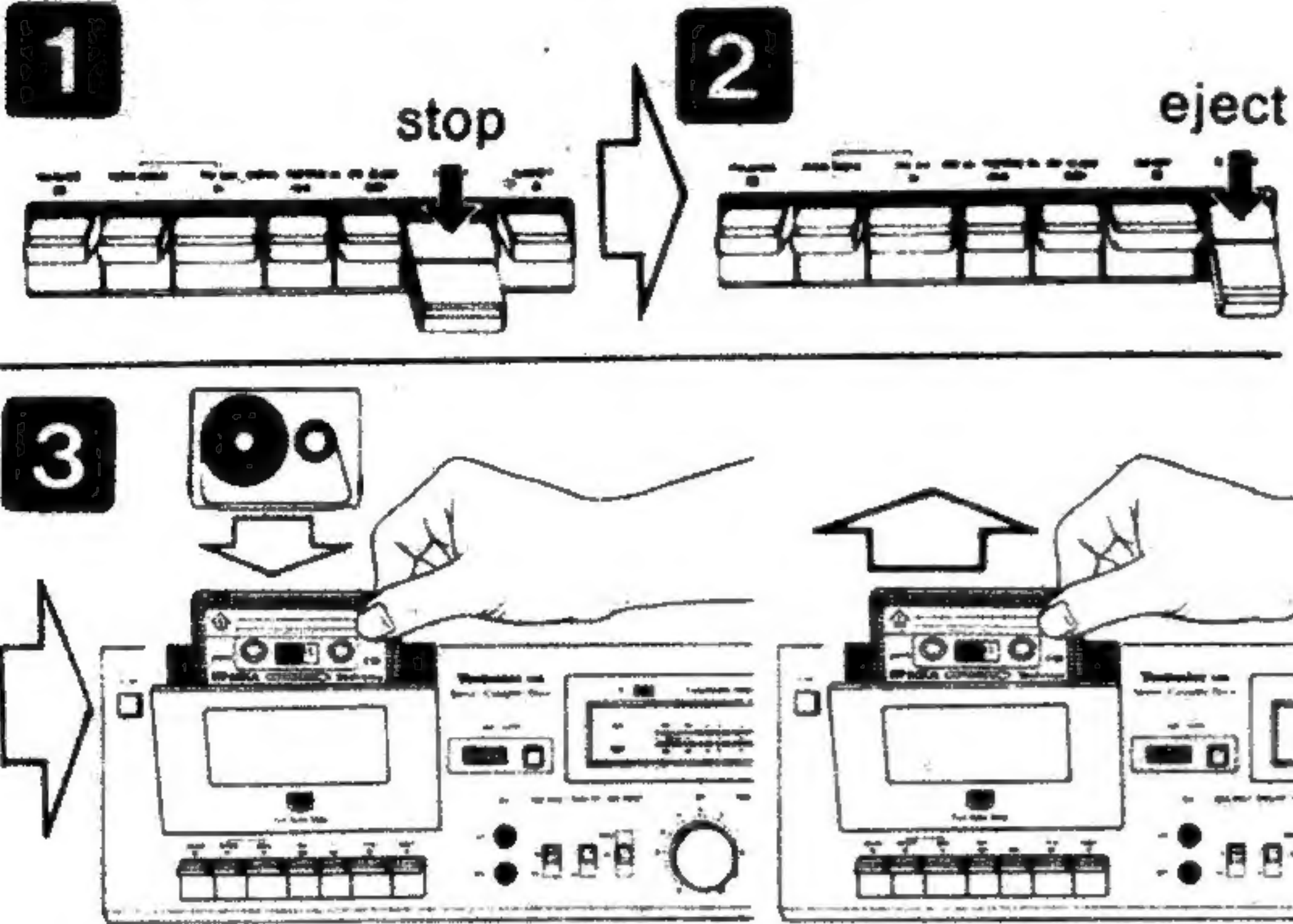
If this unit is placed on top of the stereo amplifier or next to it, a "hum" noise may be heard during tape playback. Refer to the information below in order to avoid this.

- (1) If the stereo amplifier and this unit are placed one above the other, leave as much space as possible between them, and place them where there is the least amount of hum.
- (2) If the stereo amplifier and this unit are placed one beside the other, try reversing their positions, and place them where there is the least amount of hum.



CASSETTE INSERTION AND REMOVAL

• Follow the numbered order.



Notes:
1. Be sure the open part of the cassette faces downward. If it is upside down, the Cassette Holder can't be closed.
2. Be sure to close the Cassette Holder gently.

TAPE SELECTOR

In order to get the best performance from tape, and to record and playback with minimum distortion, the Tape Selector should be set as follows:

The "Metal tape" Selector

"Metal tape" significantly improves the performance of the tape deck, but, because there is a difference of bias characteristics and the erase characteristics between conventional and "Metal tape", it is now necessary to have a special tape selector position for "Metal tape". Our tape recorders will bear the "Metal" designation for this position of the Tape Selector.

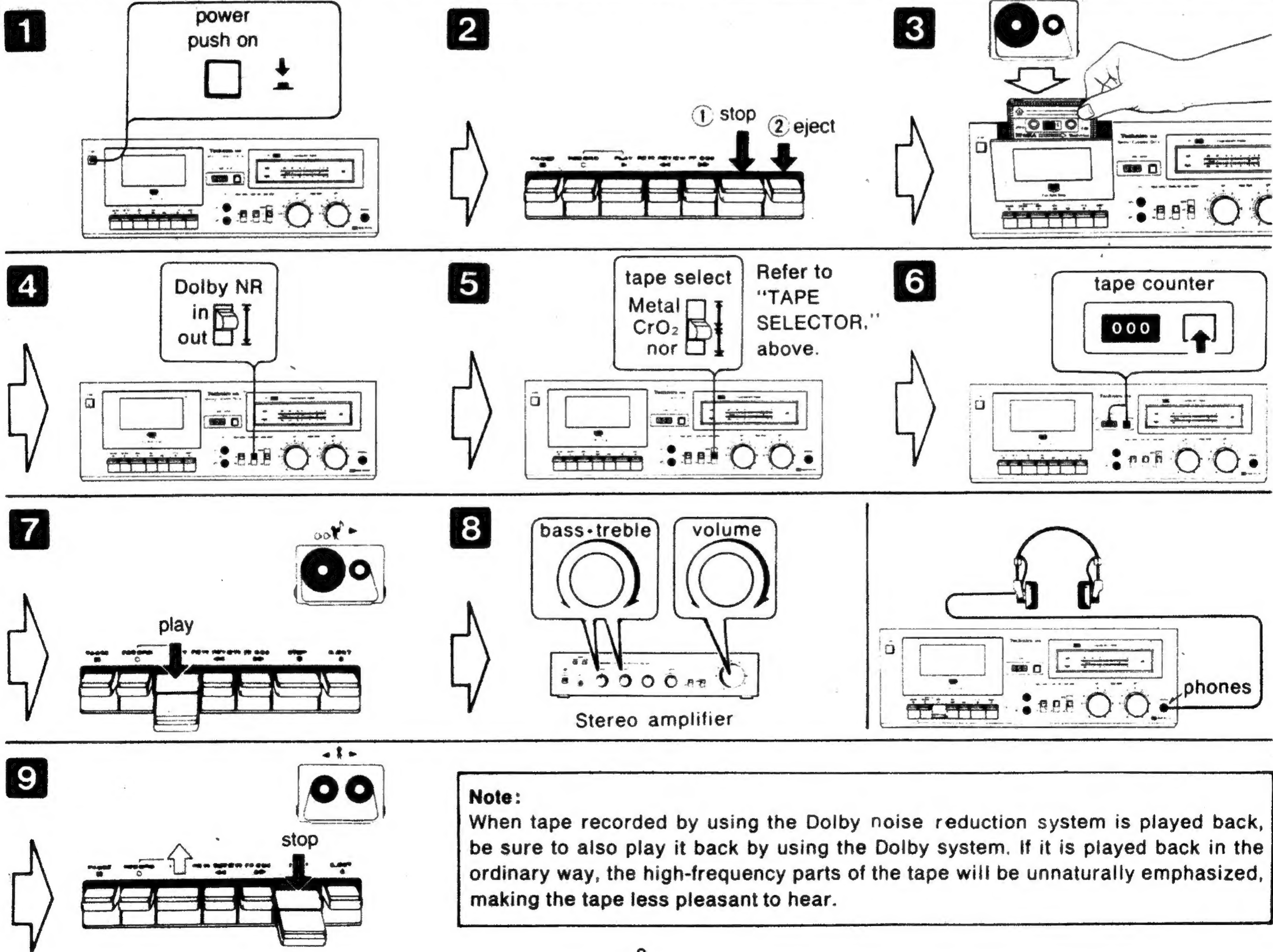
The "Metal" position

- 1. Playback time-constant70 μ S (same as at the "CrO₂" position)
- 2. Bias currentabout 150% higher (compared to "CrO₂" position)
- 3. Erase currentabout 150% higher (compared to "CrO₂" position)
- 4. Recording equalizationSpecial equalization

Tape Selector Setting	Brand	Tape Type
"nor"	AMPEX GRAND MASTER I	C-60, C-90
	BASF PROFESSIONAL I	C-60, C-90
	FUJI FX I	C-60, C-90
	MAXELL UD	C-60, C-90
	MAXELL UDXLI	C-60, C-90
	SCOTCH MASTER I	C-60, C-90
	SONY UHF	C-60, C-90
	TDK AD	C-60, C-90
"CrO ₂ "	AMPEX GRAND MASTER II	C-60
	BASF PROFESSIONAL II	C-60
	FUJI FX II	C-60
	MAXELL UDXL II	C-60
	SCOTCH MASTER II	C-60
	TDK SA	C-46, C-60
"Metal"		

Note that there may be a difference in sensitivity of 2 or 3 dB, depending on the type of tape.

PLAYBACK • Follow the numbered order.



Note:
When tape recorded by using the Dolby noise reduction system is played back, be sure to also play it back by using the Dolby system. If it is played back in the ordinary way, the high-frequency parts of the tape will be unnaturally emphasized, making the tape less pleasant to hear.

RECORDING • Follow the numbered order.

1

power
push on

2

1 stop

2 eject

3

4

Dolby NR

in out

5

tape select

Metal

CrO₂

nor

Refer to "TAPE SELECTOR," on page 3.

6

input select

line

mic

If the recording is to be made by microphone(s), set the Input Selector to the "mic" position. If the recording is to be made from equipment connected to the Line Input Jacks, set the Input Selector to the "line" position.

7

pause

8

record play

9

left input level right

Input Level Controls are each separated into two parts so that left and right channels can be adjusted separately. The left part of the controls is for the left channel, and the right part is for the right channel.

OK

OK

NO

NO

NO

NO

• Make the adjustment so that the Fluorescent Meter scales show an illuminated indication up to " +5 dB" when the input signal level is maximum.

• If the Fluorescent Meter scales show an illuminated indication of only up to about "0 dB" when a loud sound is received, the recorded results will be rather noisy (with a poor signal-to-noise ratio).

• If, conversely, the Fluorescent Meter scales continuously show the illuminated indication up to " +8 dB," the recorded results will be rather distorted.

* For recording of chamber music (such as a string quartet), and other music in which there is very little percussion sound, adjust so that the level is slightly lower (to an illuminated indication up to " +3 dB").

10

tape counter

000

11

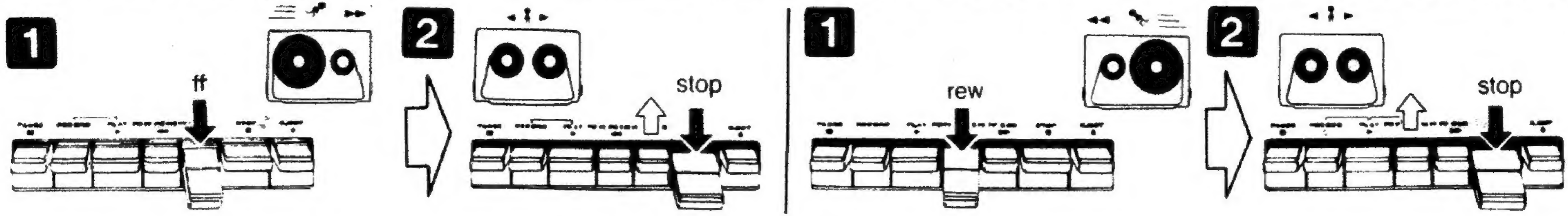
pause

12

stop

- Notes:
1. Be sure to use a cassette which has the two plastic tabs intact. If these tabs have been removed, the Record Button cannot be depressed and a recording cannot be made. (Refer to "ACCIDENTAL-ERASE PREVENTION," on page 1.)
 2. Some audio material is copyrighted, and recordings of such material must be limited to personal use and enjoyment.

FAST FORWARD AND REWIND • Follow the numbered order.



Fluorescent Meter

The Fluorescent Meter of this unit is a new type of meter, and is completely different in principle than conventional level meters which have indication needles. It can, however, be used in the same way for adjustment of the recording level. During playback it indicates the playback level, and during recording it indicates the recording level.

In addition, the meter of this unit indicates the signal peaks. By using this indication of signal peaks, it is possible to make recordings with a good signal-to-noise ratio, with little distortion, and with the tape recorded to its very limit of saturation, because it indicates a precise response to the pulsing sounds produced by percussion instruments.

Automatic-Stop System (Full Auto Stop System)

This unit has a full automatic-stop system. When the tape comes to its end during recording, playback, fast forward or rewind, the tape-transport mechanism automatically releases and places the unit into the stop mode.

* Because the mechanism automatically stops when the tape comes to its end, both the operating parts and the tape itself are protected. This unit is free from problems such as Pinch Roller deformation resulting from leaving the unit in the stop condition (without pushing the Stop Button) for a long period of time.

Monitoring

To listen to the recording as it is being made, simply plug a set of stereo headphones (8Ω) into the Headphones Jack. You may also listen to the program as it is being recorded if your receiver or amplifier is equipped with a Tape-Monitor Switch.

Pause

1. The Pause Button can be used to temporarily stop tape movement during recording or playback.
2. It can also be used to begin a recording without any delay. Push the Pause Button, and then the Record Button and the Play Button at the same time. The recording level can then be adjusted, if necessary. The recording can be started immediately at any time thereafter by simply pushing the Pause Button once again to release it from its locked-in position.

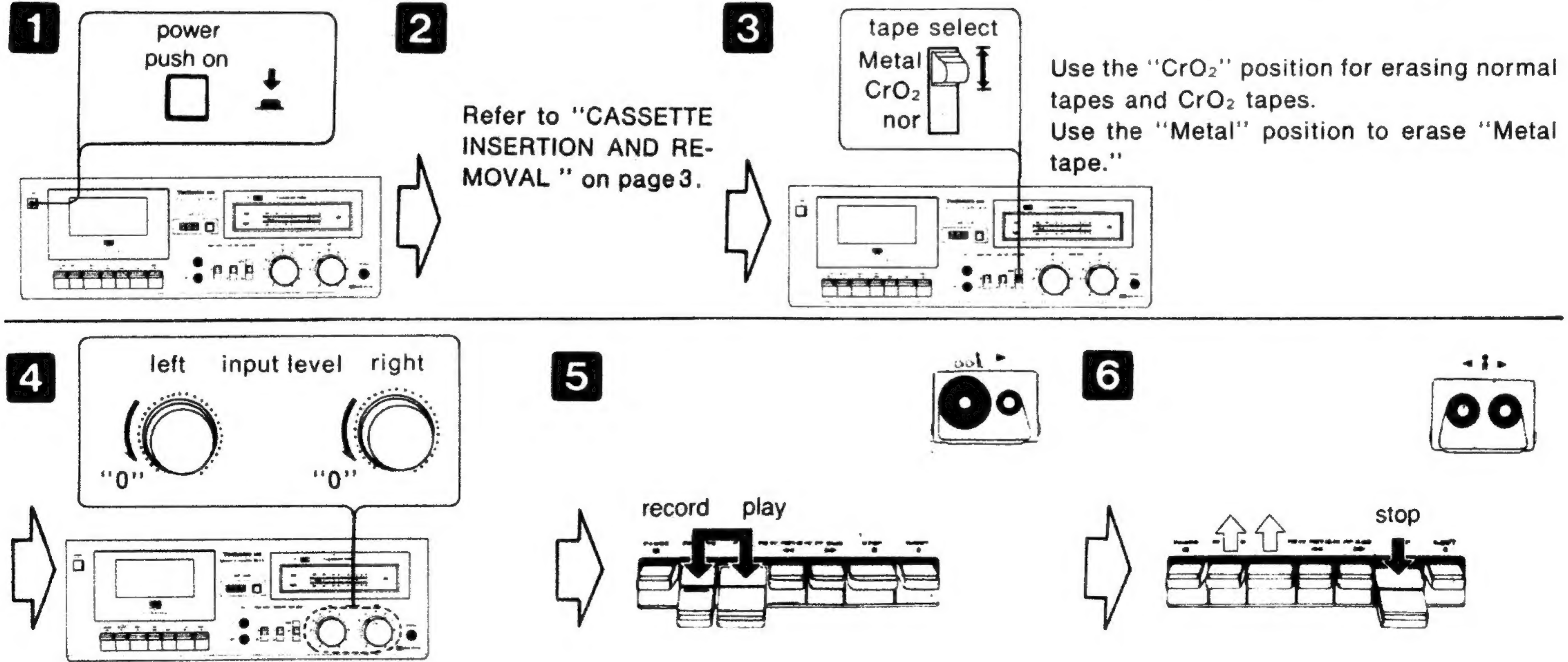
Dolby Recording

This unit includes the Dolby noise-reduction system, which reduces tape noise to a remarkable degree.

Briefly, the system works as follows: At low sound levels (where tape noise is most noticeable), the high-frequency portion of the sound is recorded at a higher level. Tape noise is not amplified.

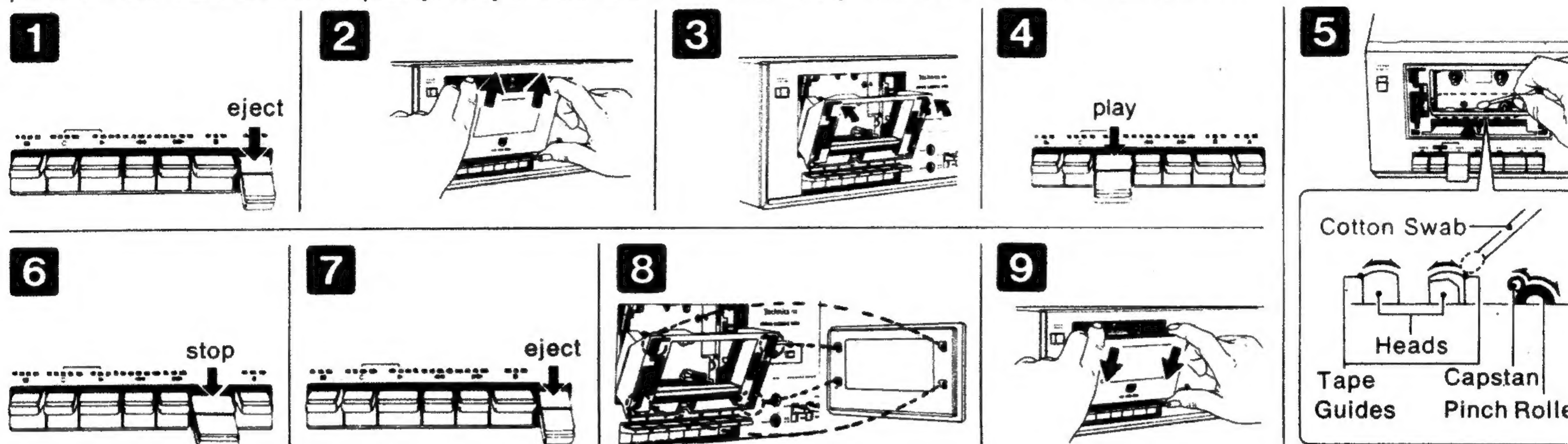
During playback, the level of only that portion of the signal which was increased at the time of the recording, as well as tape noise, is reduced by a like amount. This causes the signal to be heard at a normal level, and the tape noise to be reduced significantly.

ERASING • Follow the numbered order.



MAINTENANCE • Follow the numbered order.

Because the Head Assembly and the Capstan are in constant contact with the moving tape, dirt or residue from the tape on these parts will decrease the sound quality. They should be cleaned after every 10 hours of use, as described below:



Notes:

1. Do not permit metal or magnetic materials as a screwdriver or a magnet to come near the Head Assembly.
2. When cleaning, be careful not to bend the Tape Guides.
3. Do not clean the cabinet with benzine or thinner, because it will damage the finish. If the cabinet is dirty, clean it with a soft cloth dampened with a soap-and-water solution.
4. If the Head Assembly, Capstan and Pinch Roller are extremely dirty, apply a little alcohol to the Cotton Swab.
5. When "Metal tape" is used, the Head Assembly should be cleaned after each 10 times of use.

IN CASE OF DIFFICULTY

If operation of this unit does not seem to be normal, check the following points before requesting service. If the trouble cannot be determined and corrected, contact the dealer from whom it was purchased, or an authorized Servicenter.

1. **After the tape cassette is inserted, the tape does not move when the Play Button is depressed.**
 - Is the power cord correctly connected?
 - Is the Power Switch set to the "on" position?
 - Is the Pause Button released?
2. **Although the tape moves, no sound is heard.**
 - Is the tape blank?
 - Are the connections of amplifier and speakers correct?
 - Are connection cords from this unit to the amplifier correctly connected?
 - Is the level control of the connected amplifier set to the correct position?
 - Is the monitor switch of the connected amplifier set to the correct position?
3. **Sound is distorted.**
 - Is the recording level too high?
 - Is the input impedance of the connected amplifier appropriate?
4. **The Record Button cannot be depressed.**
 - Is the tape cassette inserted correctly?
 - Have the recording-prevention tabs on the cassette been removed?
5. **Playback sound is hoarse or "vibrates." Recorded sound is not clear.**
 - Are the head surfaces dirty?
 - Is foreign material adhering to the pinch roller and/or to the capstan?

If the unit is brought into a warm room after it has been in a very cold location (freezing temperature), it may not operate properly when first connected. This is due to condensation on internal parts of the unit. This effect will disappear, if it is allowed to stand for 30 minutes or so in a warm room before being used.

SPECIFICATIONS

Track System:	4-track 2-channel stereo recording and playback
Tape Speed:	4.8 cm/s (1-7/8 ips)
Wow and Flutter:	0.07% (WRMS)
Frequency Response:	Metal tape; 20~17,000 Hz CrO ₂ tape; 20~16,000 Hz Normal tape; 20~15,000 Hz
Signal-to-Noise Ratio:	Dolby NR in; 66 dB (above 5 kHz) Dolby NR out; 56 dB (signal level = max. recording level, CrO ₂ type tape)
Fast Forward and Rewind Time:	Approx. 86 seconds with C-60 cassette tape
Inputs:	MIC; sensitivity 0.25 mV, input impedance 10 k Ω over applicable microphone impedance 400 Ω ~10k Ω LINE; sensitivity 60 mV, input impedance 47k Ω
Outputs:	LINE; output level 0.42 V, output impedance 1.4k Ω or less load impedance 22k Ω over HEADPHONE; output level 60 mV, load impedance 8 Ω
Bias Frequency:	80 kHz
Motor:	Electronically controlled D.C. motor
Heads:	2-head system 1-MX head for rec/playback 1-ferrite double-gap head for erasure
Power Requirements:	AC 120 V, 50~60 Hz (not necessary for conversion)
Power Consumption:	10 W
Dimensions (H x W x D):	14.2cm x 41.0cm x 20.5cm (5 $\frac{5}{8}$ " x 16 $\frac{1}{8}$ " x 8 $\frac{1}{8}$ ")
Weight:	4 kg (8 lbs 13 oz)

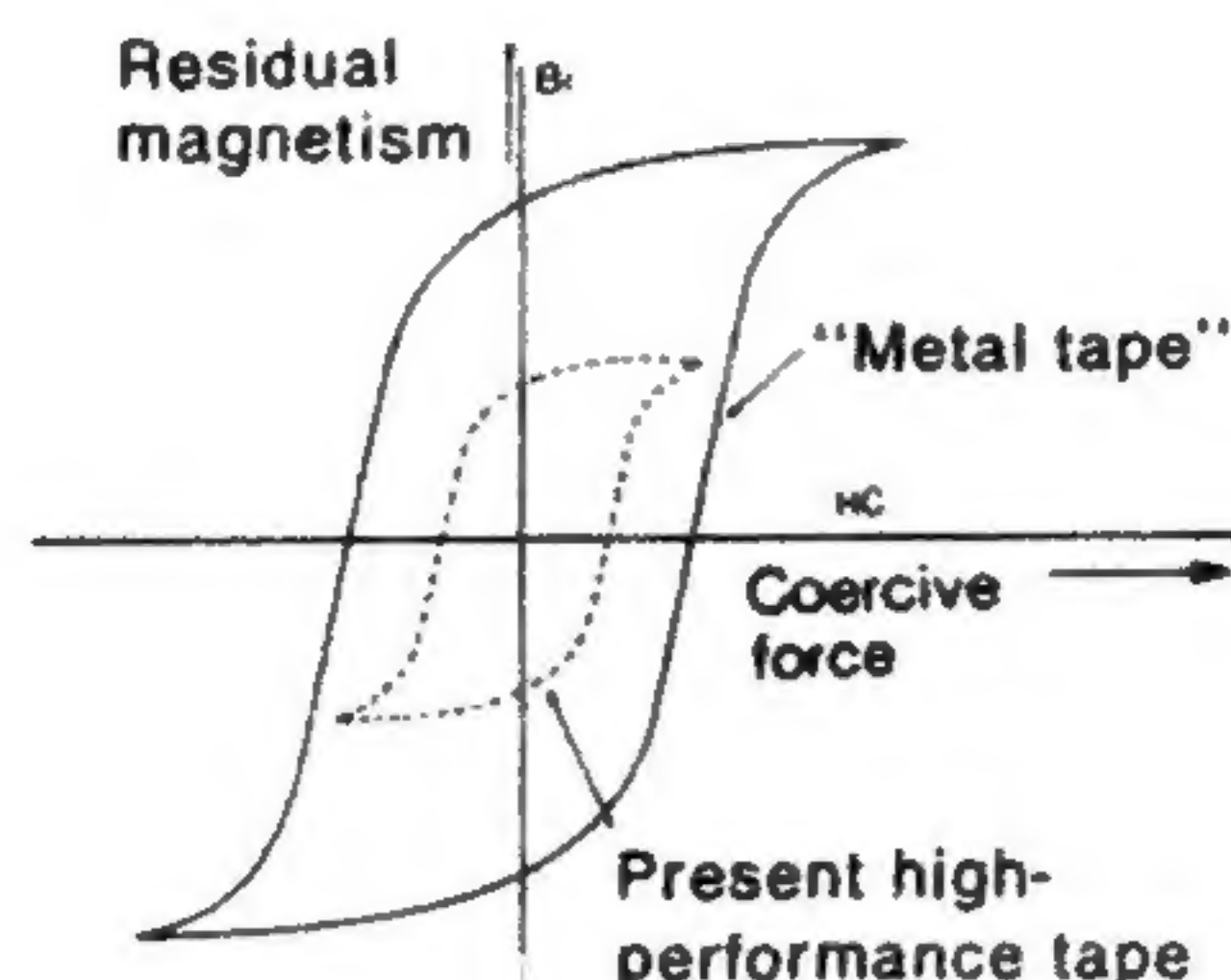
Specifications are subject to change without notice.

"Metal tape"

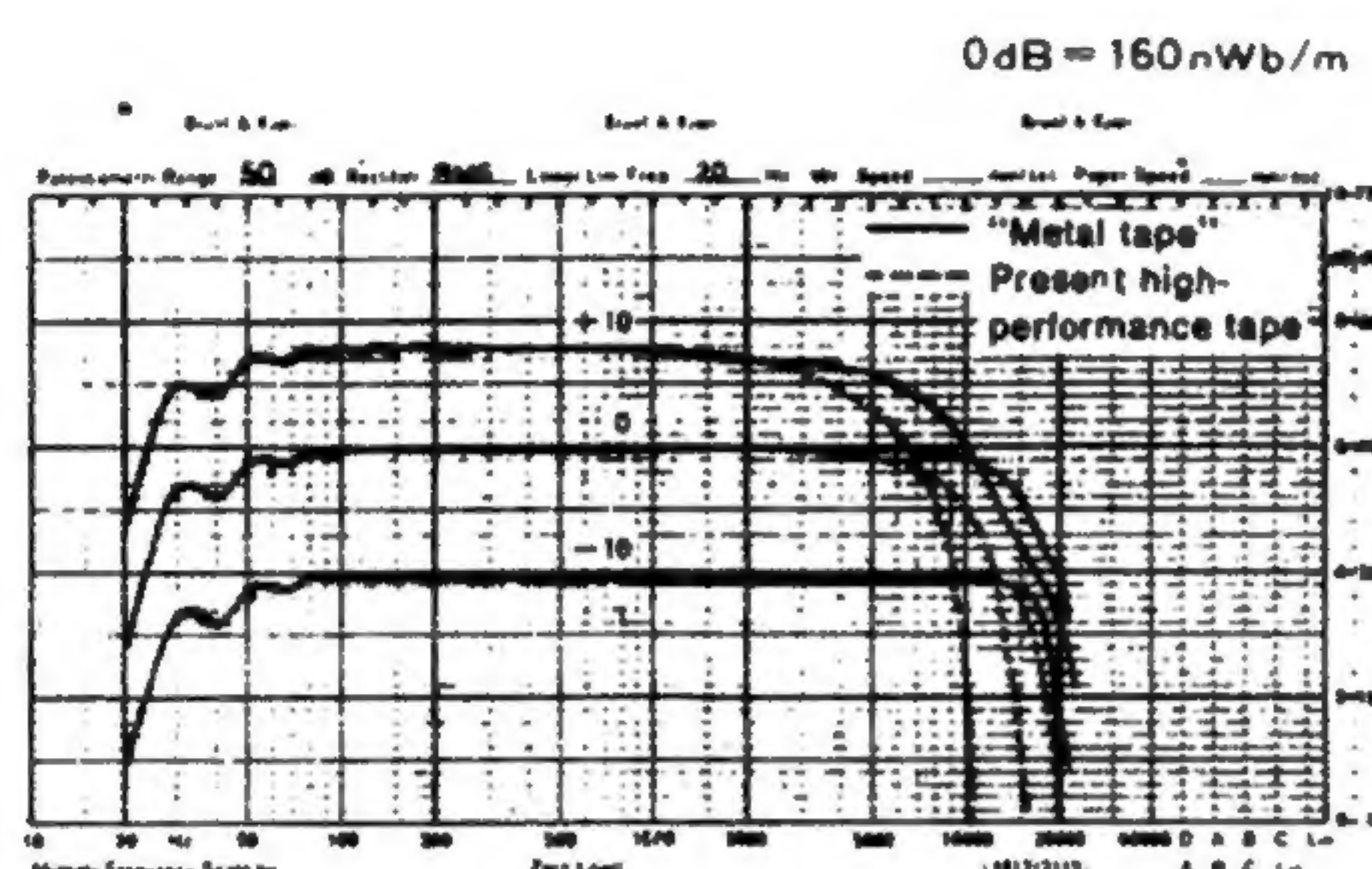
Advantages and magnetic characteristics of "Metal tape"

1. Maximum output level (MOL) is greater at all frequencies.
2. Excellent frequency response characteristics at high input level.
3. Wide dynamic range at high frequencies.
4. Excellent signal-to-noise ratio at high frequencies.
5. Low distortion.

"Metal tape" magnetic characteristics



"Metal tape" frequency response example



A word about "Metal tape"

Conventional cassette tapes can be broadly classified into 2 categories according to the magnetic material coated on the tape surface: the ferric-oxide ($\gamma\text{-Fe}_2\text{O}_3$) type, including ordinary LH tape, etc.; and the chrome-dioxide (CrO_2) type, including XA tape, etc.

Continued technological advances have been made in an attempt to develop these tapes to a high level of performance, but recently there has been a recognized need for the development of a new material to improve performance much further.

In response to this need, "Metal tape" has been developed as a new kind of tape, employing a magnetic alloy of pure iron (Fe) as the main component in the magnetic substance. In comparison with conventional cassette tape, "Metal tape" can record a far greater amount of information at a high density. As a result, the maximum output level (MOL) has been improved throughout the entire range, and, in particular, the frequency response characteristics at high levels and the dynamic range in the high range have been greatly improved. This means, therefore, that a remarkable improvement of sound quality has been made possible. (It should be noted that the tape base and parts of the tape other than the magnetic substance are composed of the same material as previously used.)

Technological developments to accomodate "Metal tape"

"Metal tape" is a totally new kind of high performance tape, and conventional cassette tape decks cannot sufficiently bring out its performance potential.

Our company has succeeded in developing the following technology to exploit the advantages of "Metal tape" to its fullest extent.

1. Development of MX head featuring minimal distortion with high input signal levels.

The MX head employs permalloy and it features a high saturation magnetic flux density and also a superlative wear resistance. It was developed especially for the new breed of "Metal tape".

2. Development of high-efficiency sendust erase head.

Sendust is a material with a high saturation magnetic flux density and it is capable of extremely efficient erasing even with "Metal tape" with a high maximum output level.

3. The power of the bias oscillator circuit has been increased.